

Amendments to the Specification

Please **add** the following paragraph at page 1, line 2:

-- This application claims the benefit, under 35 U.S.C. § 365 of International Application PCT/US03/08614, filed March 19, 2003, which was published in accordance with PCT Article 21(2) on October 9, 2003 in English and which claims the benefit of United States Provisional patent application No. 60/367/821, filed March 27, 2002. --

Please **delete** the paragraphs beginning at page 7 on page 1 as follows:

~~-- 2. Description of Related Art~~

~~When converting interlaced video to progressive scan format, a deinterlacing algorithm typically uses a temporal estimate (inter-field) in areas where no motion is detected, but uses a spatial estimate (intra-field) in motion areas. Spatial interpolation is used to generate an estimate for a missing line, based on the line above and below in the same field.~~

~~A simple method of deinterlacing a field of luminance pixels to create lines of pixels that are spatially in between the existing lines of the field is to average the values of the pixel directly above and below to create each new pixel. However, this method produces jagged edges on diagonal details in the field, such as on steps that are not horizontal or the on edges of the stripes on a flag as it waves in the wind and the angles vary.~~

~~A better method for enhanced diagonal detail, chooses between three pixel averages: the vertical average previously described and a left and right diagonal average. The left diagonal average is computed by averaging the value of the pixel to the left and above the position being interpolated with the pixel to the right and below. Likewise, the right diagonal is the average of the pixel to the right and above with the pixel to the left and below.~~

~~The basic idea of selecting between two diagonal averages and a vertical average was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's. The simplest~~

~~algorithm choosing between the three choices was denoted in their report as the DIAG1 algorithm.~~

~~———— A simple algorithm to select one of these three averages was evaluated by Sarnoff and denoted DIAG1. The DIAG1 algorithm for selecting between two diagonal averages and a vertical average computes and compares three differences using the same pixel values as the averages. For each average, the corresponding difference is computed and the absolute values of those differences are compared to find a minimum. The pixel average that corresponds to the minimum difference is selected to be the interpolated value.~~

~~———— The Sarnoff work mentioned is documented in two reports: Spatially-Adaptive De-Interlacing Techniques for Digital Feature TV, December 31, 1990 and Digital Feature TV Project Final Report, March 31, 1991.~~

~~Even with the apparent advantage of having multiple choices to consider for a spatial interpolation estimate, the existing decision process of DIAG1 appears somewhat random and noisy because the minimum value is not always the best choice. There is a long felt need for an improved decision process that is relatively simple and inexpensive to implement, but nevertheless is less random and noisy. --~~

Please **add** the following **new** paragraphs after the paragraph ending on line 6 on page 3:

--When converting interlaced video to progressive scan format, a deinterlacing algorithm typically uses a temporal estimate (inter-field) in areas where no motion is detected, but uses a spatial estimate (intra-field) in motion areas. Spatial interpolation is used to generate an estimate for a missing line, based on the line above and below in the same field.

A simple method of deinterlacing a field of luminance pixels to create lines of pixels that are spatially in between the existing lines of the field is to average the values of the pixel directly above and below to create each new pixel. However, this method produces jagged edges on diagonal details in the field, such as on steps that are not horizontal or the on edges of the stripes on a flag as it waves in the wind and the angles vary.

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average. The left diagonal average is computed by averaging the value of the pixel to the left and above the position being interpolated with the pixel to the right and below. Likewise, the right diagonal is the average of the pixel to the right and above with the pixel to the left and below.

The basic idea of selecting between two diagonal averages and a vertical average was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's. The simplest algorithm choosing between the three choices was denoted in their report as the DIAG1 algorithm.

A simple algorithm to select one of these three averages was evaluated by Sarnoff and denoted DIAG1. The DIAG1 algorithm for selecting between two diagonal averages and a vertical average computes and compares three differences using the same pixel values as the averages. For each average, the corresponding difference is computed and the absolute values of those differences are compared to find a minimum. The pixel average that corresponds to the minimum difference is selected to be the interpolated value.

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Even with the apparent advantage of having multiple choices to consider for a spatial interpolation estimate, the existing decision process of DIAG1 appears somewhat random and noisy because the minimum value is not always the best choice. There is a long-felt need for an improved decision process that is relatively simple and inexpensive to implement, but nevertheless is less random and noisy.--